

No. 672,236.

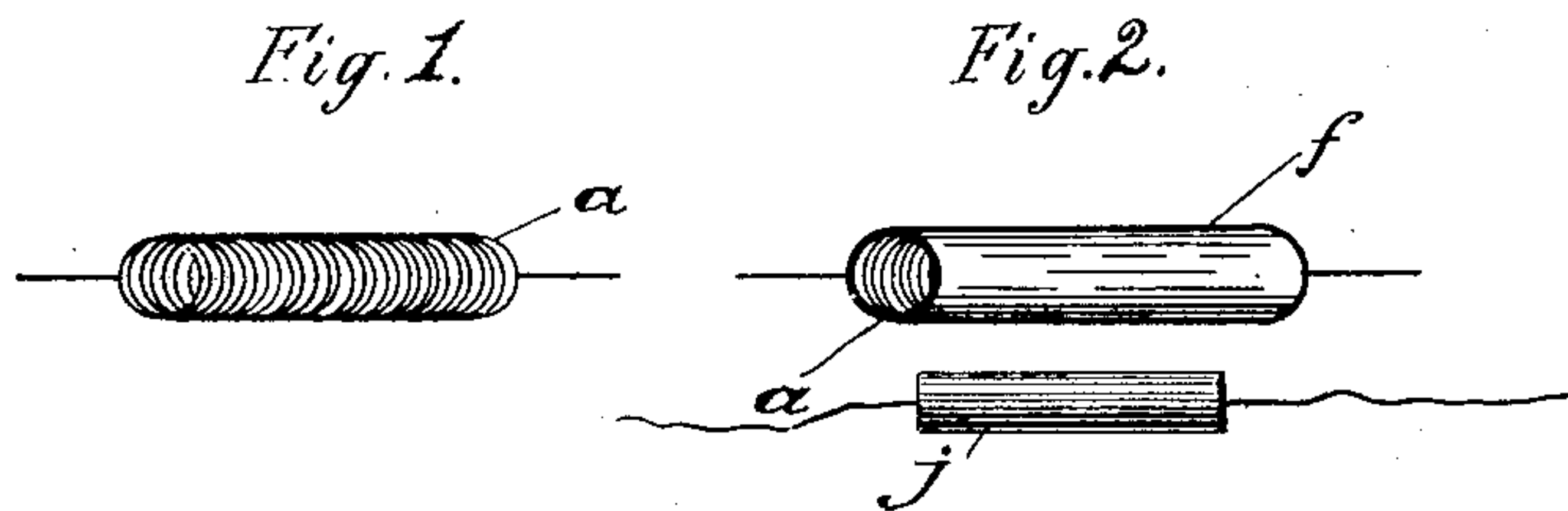
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K. OCHS.

ELECTRICAL RESISTANCE WITH SMALL HEATING CAPACITY.

(Application filed Sept. 16, 1899.)

(No Model.)



Witnesses  
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# UNITED STATES PATENT OFFICE.

KARL OCHS, OF BERLIN, GERMANY, ASSIGNOR TO THE ALLGEMEINE ELEKTRICITÄTS GESELLSCHAFT, OF SAME PLACE.

## ELECTRICAL RESISTANCE WITH SMALL HEATING CAPACITY.

SPECIFICATION forming part of Letters Patent No. 672,236, dated April 16, 1901.

Application filed September 16, 1899. Serial No. 730,666. (No model.)

*To all whom it may concern:*

Be it known that I, KARL OCHS, a subject of the Emperor of Germany, residing at Berlin, Germany, have invented certain new and useful Improvements in Electrical Resistances with Small Heat Capacity, of which the following is a specification.

For many industrial purposes it is desirable to have resistances which while capable of attaining incandescence have but small heat capacity, in order that the current flowing through them may bring them as quickly as possible into the condition corresponding with or suited to the intensity thereof. Thus, for example, it is desirable in lamps with second-class conductors or glowers heated by electric heating-bodies that the said heating-bodies should quickly attain their ultimate temperature after the current has been put into the circuit. The usefulness of these electrical heating-bodies frequently depends entirely on this point, as it is obvious that in lamps with illuminating bodies or filaments composed of second-class conductors (electrolytes) the heating-body serving for exciting the second-class conductor (electrolyte) should reach an incandescent state in the shortest time possible. Likewise with heat-balancing resistances having considerable temperature coefficients, which I use as resistances for lamps of second-class conductors, the small heating capacity is an indispensable condition if the ultimate condition as regards temperature and electrical ratio is to be quickly reached when the current passes through and if the heating of the resistance is to be immediately followed by variations in the current.

The basis of my present invention consists in the fact that for the purpose of effecting the objects mentioned the necessary insulating bearer or core for the conducting material is reduced to a minimum. This may be effected in various ways.

In the accompanying drawings I have shown resistances made in accordance with my invention.

Figure 1 shows the resistance before it is coated, and Fig. 2 shows the said resistance combined with a support and glower.

The conducting-wire *a* is closely wound into a coil or other equivalent form and is embedded in its bearer, as illustrated in Fig. 2, the wound wire or coil being covered by an extremely thin insulating layer *f*, of enamel, varnish, porcelain, or other suitable material. This may be effected in the simplest manner by spreading the thick fluid insulating substance on the wound wire or dipping the latter therein and then subjecting the whole to a process of drying or glowing, if required. In Fig. 2 I have also shown a glower *j* in operative relation to the heating resistance.

It will thus be seen that the gist of my invention consists in the employment of a filamentary or other conductor which is capable of attaining a state of incandescence and carrying the same by an insulating supporting-body of such small mass as to have small heat capacity, but which will expand under the heat and will not crack under the incandescence, so that the supporting-body will expand in harmony with the conductor and will at the same time properly support the conductor.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

As a new and useful article of manufacture, a coil of wire adapted to be brought to a very high temperature approaching white heat by electric energy and a heat-conducting insulating-body of tubular form enveloping the coils of the conductor and of such small mass as to be adapted to expand and contract under the heat generated in harmony with the conductor.

KARL OCHS.

Witnesses:

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